APPENDIX B: FINAL EXAMINATION

FINAL EXAMINATION

Instructions: This examination will test how much you have learned during the Introduction to Residential Coastal Construction course. You **must** successfully pass this test to receive credit for the course. Follow the steps below to complete this test.

Individual Enrollments

1. Some machine-scored answer sheets have been preprinted with your name, address, social security number (SSN) and course number. Please make any necessary corrections to this information in the space provided. Because the bar code on this type of answer sheet contains the same data, other students should not use an answer sheet prepared for you. Other machine-scored answer sheets require you to complete your own identification data, and will automatically update or establish your student record according to the information provided on the most recent answer sheet processed.
2. After completing the study units, take the final examination and record your answers on the answer sheet using a #2 pencil or black or blue ink pen only. (Please note: The answer sheet may contain more spaces than the number of questions on your final examination.) **To take the final exam online, visit www.fema.gov/emi/ishome.htm, and follow the links to the specific course. Most courses offer an online testing option.**
3. Fill in your return address on the reverse side of the answer sheet, provide required postage, and mail. If your preprinted answer sheet includes your SSN just above your preprinted name and address, feel free to fold your answer sheet once and mail it in a standard envelope.
4. If you misplace your preprinted answer sheet, a generic answer sheet (FEMA Form 95-5a) may have been bound on or near the last page of the text. Please complete the answer sheet as outlined below.

Students with No Answer Sheet

1. Clearly print your name, address, SSN, and course name and number at the top of a blank sheet of paper.
2. After completing the study units, take the final examination and record your answers. **To take the final exam online, visit www.fema.gov/emi/ishome.htm, and follow the links to the specific course. Most courses offer an online testing option.**

When you have completed your examination and checked your answers, mail the form to:

FEMA Independent Study Program
Independent Study Office
Emergency Management Institute
16825 South Seton Avenue
Emmitsburg, MD 21727

FEMA's Independent Study Office will score your test and notify you of the results.

1. If you are standing between the inland side of the primary frontal dune and the beach, what zone are you in?

   a. AE zone
   b. V zone
   c. X zone
   d. Coastal A zone

2. Areas that are subject to inundation by a flood that has a one percent probability of being equaled or exceeded in any given year are called:

   a. V zones
   b. Special Flood Hazard Zones (SFHAs)
   c. BFEs
   d. Coastal A zones

3. Which of the following should be avoided in coastal areas subject to wave impact?

   a. Freeboard above the BFE
   b. Elevation on pilings
   c. Continuous-perimeter wall foundations
   d. Continuous load path from roof to foundation

4. Current FIRMs do not account for:

   a. Potential loss of protective dunes during the 100-year flood.
   b. Long-term erosion.
   c. Historical trends.
   d. Topographic information.

5. Coastal sediment budget refers to:

   a. The amounts and rates of shoreline accretion vs. shoreline erosion within a defined region.
   b. The process of weighing costs and benefits of mitigation strategies.
   c. The relative pro's and cons of beach nourishment and dune restoration projects.
   d. The amount of financing a community commits to beach preservation.

6. _____ is used to establish BFEs and differentiate flood hazard zones.

   a. Wave runup
   b. Storm surge
   c. Accretion rate
   d. Wave height

7. Which of the following areas are most vulnerable to hurricanes?

   a. Southern Atlantic and Gulf of Mexico coasts
   b. Great Lakes coasts
   c. Northern Pacific coasts
   d. Alaska coasts

8. To be considered a success, a building must:

   a. Remain undamaged throughout its lifetime.
   b. Resist damage from coastal hazards over a period of decades.
   c. Survive a 100-year hazard event.
   d. Remain structurally sound (whether or not it is accessible and usable).

9. In a coast A zone, which of the following design decisions is likely to result in **reduced** long-term costs?

   a. Building on an open foundation
   b. Building on a perimeter wall foundation
   c. Building on a slab foundation
   d. Building on structural fill

10. Risk assessment must account for all of the following **EXCEPT**:

    a. Short-term and long-term effects of each hazard on the building.
    b. Cumulative effects of multiple hazards on the building.
    c. Combination of effects on the building from different hazards.
    d. The building's ability to remain undamaged over its intended lifetime.

11. Which of the following is an example of risk management through hazard mitigation?

    a. Siting as close to the shoreline as permitted by NFIP regulations.
    b. Eliminating enclosures below an elevated building.
    c. Obtaining hazard insurance.
    d. Placing the lowest floor 2 inches below BFE.

12. To determine the probability that a building will be affected by a specific natural hazard event, the designer must know:

    a. Initial, long-term, and operational costs.
    b. The acceptable level of risk.
    c. Recurrence interval of the event and period of exposure.
    d. Federal, State, and local regulations and codes.

13. After compiling information about candidate properties, the next task is to:

    a. Conduct a hazard analysis and risk assessment.
    b. Determine whether hazards can be mitigated through siting, design, or construction.
    c. Design the building.
    d. Proceed with development or reject the property.

14. FIRMs will give the designer the following information:

    a. Erosion rates and setback information.
    b. Base flood elevation and flood hazard zone.
    c. 100-year stillwater elevation.
    d. Basis for BFE determination (e.g., tide frequency analysis, wave crest, wave runup).

15. The footprint of a coastal residence lies 10 feet in the V zone and 40 feet in the A zone. According to minimum NFIP requirements:

    a. The top of the lowest floor must be at or above BFE, on an open foundation.
    b. The bottom of the lowest horizontal structural member must be at or above BFE, on a solid or open foundation.
    c. The top of the lowest floor must be at or above BFE, on a solid or open foundation.
    d. The bottom of the lowest horizontal structural member must be at or above BFE, on an open foundation.

16. A community that adopts _____ will be compliant with the regulatory requirements of the NFIP and the NEHRP recommendations.

    a. IBC 2000 and IRC 2000
    b. Building codes
    c. Standards
    d. Land use regulations

17. The NFIP regulations require that buildings be constructed with methods and practices that minimize flood damage. This requirement applies to buildings in:

    a. The CBRS.
    b. The SFHA.
    c. V zones only.
    d. A zones only.

18. Which of the following causes the most severe flood damage to coastal buildings?

    a. Vertical hydrostatic forces (flotation)
    b. Breaking waves
    c. Outflow
    d. Floodborne debris

19. Tropical cyclones can cause all of the following **EXCEPT:**

    a. Tsunamis.
    b. Coastal flooding.
    c. High winds.
    d. Significant erosion.

20. In a hurricane, even minor damage to the _____ can lead to large economic losses.

    a. Space below the BFE
    b. Service equipment and utilities
    c. Structural frame
    d. Building envelope

21. Long-term erosion:

    a. Is a key consideration in flood insurance studies (FIS).
    b. Can be halted by beach nourishment.
    c. Is not a concern for buildings built on bluffs.
    d. Shifts flood hazard zones landward.

22. Wind damage to a building depends on:

    a. The height of the building above ground and the wind event recurrence interval.
    b. The height of wind-generated waves.
    c. The shape of the building and the type, size, and protection of openings.
    d. Location of the building in a V zone, A zone, or coastal A zone.

23. In evaluating existing hazard information, designers should:

    a. Check the date of the FIRM.
    b. Disregard the FIRM because FIS methods have changed.
    c. Assume that FIRM data are reliable if the WHAFIS model was used.
    d. Recalculate all flood depths if short-term erosion has occurred.

24. Siting strategies for reducing risk include all of the following **EXCEPT**:

    a. Combining lots or parcels.
    b. Seeking variances to lot line setbacks along the landward and side property lines.
    c. Constructing protective structures (if permitted).
    d. Maximizing the building footprint to better distribute loads on the structure.

25. Which of the following is a raw land development siting practice to be avoided?

    a. Place a road close to the shoreline, with small lots grouped between it and the shoreline.
    b. Cluster development away from the shoreline.
    c. Leave the lot landward of an opening between dunes as open space.
    d. Create deep, parallel lots that allow generous setback for all buildings.

26. Which of the following is a recommended infill development practice?

    a. Site the building immediately adjacent to an existing erosion-control structure.
    b. Allow uncontrolled pedestrian access to the shoreline across dunes.
    c. Place the building exactly as close to the shoreline as allowed by regulations.
    d. Site the building farther landward than the minimum required setback.

27. Which of the following would cause insurance for a coastal residence to be more costly?

    a. Siting the building in an AE zone rather than a VE zone.
    b. Constructing the lowest floor of an elevated V-zone building above the BFE.
    c. Eliminating openings in the enclosed area below the BFE in an A zone.
    d. Locating service equipment above the BFE.

28. NFIP flood insurance is:

    a. Provided by the Federal Government.
    b. Cost-free for communities that participate in the Community Rating System.
    c. Federally backed insurance obtained through private insurance companies.
    d. Available for all homes within the SFHA.

29. If you obtain a federally regulated mortgage for your beachfront property and use that property to secure the mortgage, you:

    a. Do not need to buy flood insurance because the property is automatically insured.
    b. Are automatically eligible for NFIP insurance.
    c. Cannot obtain flood insurance.
    d. Must obtain flood insurance.

30. When assessing potential flood hazards, the effects of multiple storms should be considered.

    a. True
    b. False

31. Meeting minimum A zone foundation and elevation requirements ensures that a building can resist coastal flood forces.

    a. True
    b. False

32. Siting downdrift of a stabilized tidal inlet does not protect a building from significant erosion.

    a. True
    b. False

33. It is prudent to incorporate freeboard in the design of a coastal building.

    a. True
    b. False

34. Failure to provide a continuous load path from roof to foundation may lead to structural failure.

    a. True
    b. False

35. Designers should ignore the effects of low-frequency, rare events when determining a site's potential vulnerability to hazards.

    a. True
    b. False

36. Designers should minimize the use of breakaway wall enclosures below the BFE in V zones.

    a. True
    b. False

37. If more sediment is transported by coastal processes or human actions into a given area than is transported out, shoreline accretion results.

    a. True
    b. False

38. Stillwater elevations in coastal areas will be controlled by the wave crest elevation or the Base Flood Elevation—whichever is higher.

    a. True
    b. False

39. Because storms are short-lived, the amount of erosion induced by storms tends to be minor.

    a. True
    b. False

40. In a design seismic event, a building that sustains significant damage but protects life and provides safety would be considered a building success.

    a. True
    b. False

41. Building codes do not apply to existing buildings that are being rehabilitated or modified.

    a. True
    b. False

42. Most U.S. coastal States have adopted a model building code and/or specific requirements concerning the construction of buildings in coastal flood and wind hazard areas.

    a. True
    b. False

43. Safety factors are inherent in the design process for wind but not for flood.

    a. True
    b. False

44. Prudent siting and insurance are both mitigation approaches.

    a. True
    b. False

45. In identifying candidate coastal properties for development, past development practices in the area are one of the best indicators of potential success.

    a. True
    b. False